

IN THE CLAIMS

1- 13. (Canceled)

14. (Currently Amended) The process according to Claim ~~43~~ 29 for preparing compounds of the formula (I) wherein for olefins of the formula (II) the substituents R¹ to R⁴ are each, independently of one another, hydrogen, alkyl, CN, COOH, COO-alkyl, COO-aryl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, N-alkyl₂, aryl, fluorine, chlorine, bromine, iodine, CHO, CF₃, NHCO-alkyl, CONH₂, CONH-alkyl, or NHCOO-alkyl.

15. (Currently Amended) The process according to Claim ~~43~~ 29 wherein diols of the formula (I) in which R¹ to R⁴ are each, independently of one another, hydrogen, alkyl, CN, COOH, COO-alkyl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, aryl, fluorine, chlorine, bromine, CHO, or NHCO-alkyl are prepared.

16. (Currently Amended) The process according to Claim ~~43~~ 29 wherein the oxidant is ~~oxygen or~~ a gas mixture comprising at least 15% by volume of oxygen.

17. (Canceled)

18. (Currently Amended) The process according to Claim ~~43~~ 29 wherein the reaction proceeds at a temperature of from 20 to 200°C and a pressure of up to 200 bar.

19. (Canceled)

20. (Previously Presented) ~~A~~ The process according to Claim ~~40~~ 29 wherein the amine is a tertiary amine.

21. (Previously Presented) ~~A~~ The process according to Claim ~~40~~ 29 wherein the amine is a bicyclic amine of the quinuclidine type.

22. (Currently Amended) The process according to Claim ~~43~~ 29 wherein a sulfonamide is added as a cocatalyst.

23. (Currently Amended) The process according to Claim 22 wherein the sulfonamide cocatalyst is a methylsulfonamide or ~~and/or~~ a carboxamide.

24. (Currently Amended) The process according to Claim ~~43~~ 29 wherein the osmium compounds OsO₄, K₂Os₂(OH)₄, Na₂Os₂(OH)₄, Os₃(CO)₁₂, OsCl₃,

H_2OsCl_6 , $[\text{CF}_3\text{SO}_3\text{Os}(\text{NH}_3)_5](\text{O}_3\text{SCF}_3)_2$, OsO_4 on vinylpyridine, or Bu^tNOsO_3 are used as catalysts or ~~and/or~~ catalyst precursors.

25. (Currently Amended) The process according to Claim ~~43~~ 29 wherein the manganese compounds MnO_2 , KMnO_4 , $\text{Ca}(\text{MnO}_4)_2$, MnCl_3 , or $\text{Mn}(\text{OAc})_3$ are used as catalysts or ~~and/or~~ catalyst precursors.

26. (Currently Amended) The process according to Claim ~~43~~ 29 wherein the ruthenium compounds RuCl_3 , RuO_4 , or RuO_2 are used as catalysts or ~~and/or~~ catalyst precursors.

27. (Currently Amended) The process according to Claim ~~43~~ 29 wherein the catalyst is used in amounts of from 0.2 to 0.00001 equivalents, based on the olefin.

28. (Currently Amended) The process according to Claim ~~43~~ 29 wherein the ratio of amine to metal is from 0.01:1 to 1 000:1.

29. (New) A process for the dihydroxylation of olefins using transition metal catalysts to obtain monofunctional, bifunctional, and/or polyfunctional 1,2-diols of the formula (I)



where

R^1 to R^4 are each, independently of one another, hydrogen, alkyl, CN, COOH, COO-alkyl, COO-aryl, CO-alkyl, CO-aryl, O-alkyl, O-aryl, O-CO-aryl, O-CO-alkyl, OCOO-alkyl, N-alkyl₂, NH-alkyl, N-aryl₂, NH-aryl, NO, NO₂, NOH, aryl, fluorine, chlorine, bromine, iodine, Si-alkyl₃, CHO, SO₃H, SO₃-alkyl, SO₂-alkyl, SO-alkyl, CF₃, NHCO-alkyl, CONH₂, CONH-alkyl, NHCOH, NHCOO-alkyl, CHCHCO₂-alkyl, CHCHCO₂H, PO-(aryl)₂, PO(alkyl)₂, PO₃H₂, or PO(O-alkyl)₂, where alkyl is a linear, branched, or cyclic aliphatic organic group having from 1 to 18 carbon atoms and aryl is a 5-, 6-, or 7-membered aromatic ring containing from 4 to 14 carbon atoms and from 0 to 3 heteroatoms and is optionally fused, and where the alkyl or the aryl group optionally bears up to six substituents selected independently from the group consisting of hydrogen, alkyl, O-alkyl, OCO-alkyl, O-aryl, aryl, fluorine,

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chlorine, bromine, iodine, OH, NO₂, NO, Si-alkyl₃, CN, COOH, CHO, SO₃H, NH₂, NH-alkyl, N-alkyl₂, PO-alkyl₂, SO₂-alkyl, SO-alkyl, CF₃, NHCO-alkyl, COO-alkyl, CONH₂, CO-alkyl, NHCOH, NHCOO-alkyl, CO-aryl, COO-aryl, PO-aryl₂, PO₃H₂, PO(O-alkyl)₂, and SO₃-alkyl, where alkyl and aryl are as defined above,

comprising reacting an olefin of the formula (II)



where R¹ to R⁴ are defined as for formula (I),

with an oxidant comprising molecular oxygen or a gas mixture comprising molecular oxygen in the presence of an osmium, ruthenium, or manganese compound in water or a water-containing solvent mixture at a pH of from 7.5 to 13; and adding an amine to achieve improved selectivity.